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# Flipped classrooms in higher education: A comparison of implementation in the United Kingdom and Japan

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**Abstract.** This article aimed to investigate the influence of the flipped classroom approach on students' active involvement and the results of academic learning in higher education, with consideration of pedagogical practices and cultural specifics in the universities of Luton and Tokyo. The study used the methods of theoretical analysis of the concept of a flipped classroom, content analysis of curricula and educational online platforms of British and Japanese universities, pedagogical experiment based on the flipped classroom model during one semester (February-June 2024) at the Universities of Bedfordshire (United Kingdom) and of Tokyo (Japan), with the participation of 360 students, as well as the development of scenarios of organisation of students' learning activities in the framework of the flipped classroom approach. The content analysis showed that the use of interactive multimedia (PlayPosit, H5P, Genially, Socrative, OneNote) allows students to interactively assimilate the material, collaborate and actively communicate. The pedagogical experiment revealed that the students of the experimental group obtained higher mean values (United Kingdom $M = 4.76$; Japan $M = 4.85$) as compared to the control groups (United Kingdom $M = 4.05$; Japan $M = 4.10$), mainly due to collaborative interaction, active participation in the lectures with the professor, and working with interactive online resources. The highest level of full task execution was in experimental groups on the discussion of problems in the group (88-90%), and the lowest level was in the control groups on the reports of individual students (65-66%). In other tasks, it was shown that collaborative work leads to a better quality of assimilation of educational material, while individual tasks result in an average level of assimilation of the educational material. The difference between the groups was statistically significant ($p < 0.05$), and the dynamics of the indicators in the experimental groups confirmed the effectiveness of the flipped classroom model. Learning activity scenarios can enhance motivation, engagement and knowledge acquisition. The practical significance of the study lies in the possibility for lecturers and higher education administrators to use the findings to implement the flipped classroom model in order to increase student interest, learning motivation and the effectiveness of material assimilation

**Keywords:** students; online resources; communicative skills; material assimilation; motivation

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## INTRODUCTION

The study of flipped classrooms in higher education is necessary, as this approach combines independent study of learning material with active in-class interaction, thereby creating conditions for knowledge acquisition and the development of critical thinking. In the United Kingdom, this model serves as an instrument for developing the skills of thinking analytically, independent and critical thinking and the ability to reflect as per the requirements of professional training. In Japan, a new model has been introduced within the cultural traditions of collective learning and disciplined education, stimulating the students' motivation and engagement. In comparing the British and Japanese experience, this allows for the analysis of the contribution of cultural, methodological and technological components to the effectiveness of the flipped classroom as a pedagogical method, and to determine the optimum way to implement this model in different countries. Such an analysis could lead to the improvement of teaching methods of higher education and raise the quality of the educational process in general.

The concept of a flipped classroom is becoming popularised in universities around the world, including the United Kingdom and Japan, thereby offering the opportunity to reassess the traditional methodology and practice of higher education. Researchers have examined this topic in order to determine the effectiveness of the model in fostering students' cognitive activity, independence and academic performance. B. Birgili *et al.* (2021) have noticed that the number of publications about the flipped classroom has been steadily increasing from 2012 to 2018. According to these authors, most studies provide support for the effectiveness of flipped learning in improving the quality of educational achievements and increasing the motivation of the students. In British universities, flipped classrooms have already been integrated into language, technical and pedagogical disciplines, reflecting an effort to enhance learning activity through the combination of online and in-class formats. According to A. Andujar *et al.* (2020), the study carried out in the United Kingdom revealed that mobile phones were among the important technologies involved in the flipped learning concept in the domain of foreign language education. The use of digital platforms for selfstudy offers flexibility and allows learners to set their own pace. This confirms the results obtained by M. Jiang *et al.* (2020), who found that within language education, the flipped classroom provides opportunities for interactive learning in which the interaction between the student and the lecturer occurs with the use of digital tools in a hybrid format. Japanese researchers are more interested in the problem of cultural adaptation of the flipped classroom format. A. Ito *et al.* (2022) studied the efficiency of the application of the flipped classroom in the context of Japanese education and proved that the flipped classroom model is more effective in the assimilation of theoretical material, in that students prepare beforehand (at home), and in class, practice the acquired knowledge. Such a format is more efficient than the traditional lecture in disciplines that require combining theory and practice. B. Aksoy & E. Pasli Gurdogan (2022) found that the flipped approach in student training contributes to the development of motivation, the improvement of learning strategies and the enhancement of professional skills. Participants in the experiment demonstrated higher performance in practical tasks than those taught using a traditional model.

S. Dianati *et al.* (2020), who also studied student attitudes toward the use of interactive learning platforms, pointed out that its implementation promotes a more active approach to learning on the students' part. This is supported by the increased level of lecturer–student interaction that was revealed and by the increase in students' interest in learning. In the meantime, P. Joy *et al.* (2023) pointed out that the interplay between emotional and cognitive factors during a flipped classroom can provide students with a good learning environment to encourage active thinking and collaboration. M. Ozudogru & M. Aksu (2020) have found that teachers with less experience consider that flipped classroom sessions are more flexible and supportive of critical thinking, but noted the need for more preparation for independent study. It can be assumed that the effectiveness of this method depends on the course design and the students' readiness for independent study. The potential of the flipped classroom for the development of higher-order cognitive skills is examined by Japanese and United Kingdom scholars. It has been shown by Y. Ma (2023) that the flipped classroom model contributes to the development of critical thinking skills, which is evidenced by the focus on critical analysis, argumentation and the analysis of practical problems during class. Students exhibit a higher level of cognitive engagement and improved assimilation of learning material. R. Ramadhani & Y. Fitri (2020) show that the combination of the project-based learning approach with the flipped classroom model promotes more in-depth understanding of the content and the ability to apply the acquired knowledge in practice, in their field of expertise. Such an organisation of education promotes the development of collaboration skills and responsibility for group outcomes.

However, the studies mentioned above still leave gaps, notably in relation to the limited comparison of the effect of using a flipped classroom approach across different countries with a variety of cultures and education systems. Not enough attention is paid to such factors as pedagogical traditions, motivation styles, and digital literacy in the United Kingdom and Japan. This article aimed to determine the effectiveness of implementing the flipped classroom model in enhancing student engagement and improving academic performance in higher education institutions in Japan and the United Kingdom. The objectives of the study were to conduct a content analysis of methodological programmes, teaching models and digital resources within the flipped classroom approach; to evaluate the effectiveness of the flipped classroom model in relation to student motivation and learning outcomes in the United Kingdom and Japan;

to determine the impact of the pedagogical experiment on student motivation and academic performance; and to develop scenarios of student learning activities based on the flipped classroom model.

## MATERIALS AND METHODS

The study employed a mixed-methods design, combining content analysis of educational materials with a pedagogical experiment and quantitative statistical analysis of learning outcomes. Within the theoretical and analytical stage, a content analysis was conducted of teaching materials and practices related to the implementation of the flipped classroom in universities in the United Kingdom and Japan. Methodological programmes of the Department of Flipped Learning Technologies (FLIT) (n.d.), as well as those of the University of Bedfordshire (Clifford, 2018), were analysed.

The principal models of flipped learning were also systematised: the Collaborative Flipped Model (n.d.), the Flipped Mastery Model (Laoha & Piriyasurawong, 2018), and the Flipped MOOC (Massive Open Online Course) Model (Pan *et al*., 2022). In addition, the Flipped Interactive Model (Gasaymeh & AlMohtadi, 2024) and the Traditional Flipped Classroom (Singha, 2025) were examined. A range of digital educational resources was used to implement learning tasks. Specifically, PlayPosit (n.d.) enabled the creation and delivery of an interactive learning presentation, and H5P (n.d.) was used to build a number of interactive assignments. Genially (n.d.) was used to create images, visualisations and presentations, Socrative (n.d.) was used to prepare different online activities like tests and surveys. OneNote (n.d.) was used to ensure that feedback would be easy to receive by providing students with the opportunity to leave digital comments and share useful information. In conducting content analysis of the teaching materials and learning practices, comparisons were made on the basis of the following: the organisation of independent work (online/offline) in a flipped classroom; the content of classroom interaction; the types of digital resources applied; and cultural and pedagogical features of education.

The pedagogical experiment was carried out for one semester (February-June 2024) at the University of Bedfordshire (United Kingdom) and the University of Tokyo (Japan), which were chosen owing to differences between the national education systems and the high level of digitalisation of the universities. The experiment involved 360 students of the third year of the Pedagogy major (180 from the United Kingdom and 180 from Japan). Their age ranged from 21 to 22 years old. The factor of sex was not considered. Participants were selected under the condition that they consented to participate and attended 70% of the classes. The following criteria were the grounds for exclusion: missed more than 30% of online and face-to-face classes; did not fulfil practical tasks; and failed to complete the questionnaire. Assessment of outcomes was carried out by four lecturers with at least three years' experience of working with the flipped classroom model, none of whom taught other student groups within the experiment concurrently.

The participants at both universities were randomly and equally divided into control and experimental groups. Both groups used the flipped classroom, but the organisation of learning activities was different. For the control groups, individual activities were mainly used; for the experimental groups, collaborative forms of interaction (group work, teamwork, group decision-making) were used. Students performed the following kinds of learning activities: watched video materials, took online tests, analysed case studies, performed practical tasks, prepared presentations, participated in discussions, and prepared reflective essays. The effectiveness of learning was assessed using pre-test and post-test measures.

A questionnaire was used to evaluate the level of the students' interest and engagement. The questionnaire contained items based on the 5-point Likert scale (1-5). These included the following statements: "Active preparation of material before the session"; "A sense of interest during group discussion"; "The model facilitated a better understanding of the material"; "Willing participation in practical tasks during the session"; "Confidence when completing tasks independently"; "Active interaction with the lecturer during the explanation of new material"; "Application of acquired knowledge in group projects"; "Satisfaction with individual learning progress". Student motivation was additionally assessed using the AMS – Academic Motivation Scale (n.d.). Data from the learning tasks were presented as percentages and categorised in four groups: low (up to 20%), moderate (20-50%), high (50-80%), and very high (over 80%). Statistical data processing was carried out using SPSS (Statistical Package for the Social Sciences). Mean values (M) were calculated, and Student's t-test and ANOVA were used to test for differences between groups and types of learning activities in terms of motivation and learning outcomes. The reliability of the assessment tools was tested using Cronbach's α coefficient, with a level of statistical significance set at $p < 0.05$.

Additionally, the comparative analysis of the results of individual and group tasks and the content analysis of learning results were carried out. This made it possible to interpret the findings with regard to the cultural and pedagogical characteristics of education in the United Kingdom and Japan, as well as to evaluate the effectiveness of implementing the flipped classroom model, the development of practical skills, critical thinking and collaborative interaction. The study was carried out in accordance with the provisions of the Declaration of Helsinki of the World Medical Association (World Medical Association, 2013) and was approved by the university's ethics committees. All students were informed about the purposes and conditions of the research and had the opportunity to withdraw from it.

## RESULTS

### Content analysis of methodological programmes, models of teaching and digital resources of the flipped classroom

The flipped classroom is a model in which students study the primary material by themselves prior to class, while

during the classroom period, there is active learning, discussion, practical activities and project work (Strelan *et al.*, 2020). In this case, the lecturer's role is that of tutor, responsible for the organisation of interaction and support. This model promotes knowledge acquisition, the development of critical thinking, teamwork and student autonomy. The organisation of the flipped classroom is based on prior independent preparation, interactive in-class activities and the use of digital resources. The model is associated with active and blended learning and supports differentiation and adaptive assessment (Li *et al.*, 2023; El Baaqyly, 2023), thereby enhancing motivation and enabling regulation of the pace of learning (Chen & Hsu, 2022). Digital platforms, video materials, Learning Management System (LMS), and online tests contribute to the organisation of a free space for self-study and for the efficient use of classroom time. Moreover, within the Transform4Europe (n.d.) initiative, they facilitate academic mobility and student integration in international learning opportunities.

In Japan, the Department of Flipped Learning Technologies (FLIT) (n.d.) programmes are designed to integrate the collaborative learning forms such as group discussion, joint problem solving, and gradual learning following the "mastery learning" principles. In this country, much attention is paid to the traditional values of Japanese pedagogy, such as strict discipline, organisation, student community, and gradual mastery of knowledge (control by means of regular tests and group work). In contrast, as is demonstrated by the University of Bedfordshire (Clifford, 2018) in the United Kingdom, the flipped classroom is based on the principle of active independent work of students, the development of their critical and analytical thinking and autonomy in learning. During class time, students are engaged in discussions, practical tasks and case studies, which enables them to get more involved and to develop relevant communicative and decision-making skills. Thus, the main difference between the two countries' programmes is their cultural and pedagogical orientation: Japanese programmes are focused on collaborative learning and staged knowledge building, whereas British approaches rely more on individual student activity and the development of critical and analytical thinking through free study and interactive classroom work. An analysis of the experience of the universities of Luton and Tokyo shows that in both countries, students initially engage with learning materials online, while classroom time is primarily devoted to discussion and the completion of practical tasks. However, differences in approach remain. While the Japanese experience focuses mainly on collective tasks and group discussions (which is in line with traditional methods), in the United Kingdom, there is a tendency to give more attention to individual student work, the development of critical thinking skills and the use of knowledge autonomously. The main existing types of the flipped classroom model, along with their main characteristics and the differences in terms of learning organisation, roles of students and lecturers, usage of technologies and collaboration, are presented in Table 1.

**Table 1.** Main global types of flipped classroom models, their characteristics and differences

| Type of model | Features | Differences from other models in the table |
|---|---|---|
| Traditional Flipped Classroom | A basic flipped learning model in which theoretical material was studied independently by students at home using video lectures, presentations or online resources. Classroom time was used for discussion, practical tasks and the application of knowledge in practice | Focused on changing the sequence of learning activities without the use of advanced digital technologies or adaptive approaches |
| Flipped Mastery Model | Provided for students progressing to a new unit only after achieving a defined level of mastery of the previous material. It enabled individual learning pathways and involved the use of testing and self-assessment systems | Distinguished by a stepwise progression and the principle of "mastery learning". It supported a deeper understanding of content, but required more time for independent study |
| Collaborative Flipped Model | This model combines flipped learning with collaborative activity, including group work, joint projects, discussions and problem-solving tasks. Emphasis is placed on the development of communicative, social and critical skills | It differs from the basic model in that primary attention is given to student collaboration and the co-construction of knowledge within groups |
| Flipped Interactive Model | This model integrates digital technologies such as artificial intelligence, interactive platforms and adaptive learning systems, which provide personalised support and real-time feedback for students | It is a technologically advanced model aimed at individualising learning and developing practical competences through interaction with digital tools |
| Flipped MOOC Model | This model combines the flipped classroom approach with massive open online courses. Students study theoretical material via MOOC platforms, while practical sessions and discussions are conducted synchronously or within local learning groups | It is characterised by its scalability, openness and blended learning format (online and offline). It provides access to education for a large number of participants |

**Source:** compiled by the authors based on research Collaborative Flipped Model (n.d.), R. Laoha & P. Piriyasurawong (2018), H. Pan *et al.* (2022), A. Gasaymeh & R. AlMohtadi (2024), A. Singha (2025)

As for the application, different models offer a flexible organisation of the learning process by combining students' independent work and active work in the classroom. In particular, this allows students to study theoretical materials and gain knowledge at their own pace, supported by the lecturers in practical tasks, discussions and group

work. The individual model, such as the Flipped Mastery Model, encourages students to acquire a deep understanding of the material through sequential knowledge building, and the collaborative model contributes to the formation of communication and teamwork competencies. Interactive and technology-rich models involve the use of digital platforms and artificial intelligence systems, which enable the personalisation of learning and the provision of immediate feedback. Mass online models (Flipped MOOC) ensure access to education for large numbers of students by combining distance-based content acquisition with synchronous practical sessions. Overall, the application of these models enhances learning effectiveness, fosters student motivation, develops competences and facilitates the integration of technology into the educational process.

Within online resources used in the flipped classroom, several groups can be identified according to their functionality and purpose. The first group is interactive video platforms and exercises (such as PlayPosit (n.d.), H5P (n.d.) and others) used for independent learning, interactive tasks, understanding and feedback. The second group is a group of tools for visualisation and interactive content creation (for example, Genially (n.d.)), used for making presentations with interactive elements, creating infographics and simulating the learning material to attract students and increase learning effectiveness. The third group is the tools for assessment and knowledge management (such as Socrative (n.d.)) used for real-time surveys, tests and quizzes, student progress control and lesson adjustment based on the group performance. The fourth group is the tools for organisation and group work (such as OneNote (n.d.)), used for systematisation of the materials, notetaking, completing tasks in the group and the storage of results. Taken together, these four groups of resources provide a basis for a flipped learning environment where students combine independent preparation, practical exercises and groupwork for improved learning and competencies development.

In their interrelation, flipped classroom model types, educational programmes, and digital resources constitute a coherent learning environment in which the organisation of student work, the structure of classroom activities, the use of technologies and cultural and pedagogical conditions interact with one another. The types of models define the interaction between independent online preparation and active group work at the lecture: while the traditional model emphasises individual preparation and practical exercises at the lesson, in the Flipped Mastery Model students work on material sequentially and get progress monitoring, in the Collaborative Flipped Model the lesson focuses on group discussion and solving tasks, in the interactive model there is a combination with interactive platforms and in the MOOC-based model personalisation and scaling of education. Educational programmes determine the models by describing the form and volume of independent student work, requirements, organisation of class time and distribution of roles between teachers and students, also describing conditions related to national culture and pedagogy (that impact learning expectations and learning patterns of students). Digital resources provide interactivity, monitoring of learning outcomes and communication support, enabling the integration of online and offline activities. Thus, the content analysis made it possible to identify the key features of flipped classroom organisation in universities in the United Kingdom and Japan, including the forms and extent of independent student work, the structure of classroom sessions, the role of the lecturer, the use of digital resources and the prevailing cultural and pedagogical conditions.

### Evaluation of the effectiveness of the flipped classroom model on motivation and learning outcomes

Motivation and learning outcomes are closely interrelated, as higher intrinsic interest in learning promotes more active student participation in academic tasks, which in turn encourages engagement with learning materials, the development of stable competences and the achievement of higher academic performance. To establish the effectiveness of the teaching technology implemented, it was important to obtain primary data for the subsequent comparison of results. Thus, primary data on student learning activity were obtained; the pre-test results of which were conducted in the United Kingdom and in Japan are shown in Table 2. The pre-test shows the initial learning activity levels of the control and experimental groups in terms of the level of engagement, interest, and level of assimilation of the learning material before the start of the pedagogical experiment.

**Table 2.** Results of preliminary testing in the UK and Japan (CG and EG)

| Questionnaire item | United Kingdom | | Japan | |
|---|---|---|---|---|
| | CG (1-5 points/number of students) | EG (1-5 points/number of students) | CG (1-5 points/number of students) | EG (1-5 points/number of students) |
| Active preparation of material before the session | 1-10<br>2-15<br>3-20<br>4-25<br>5-20 | 1-2<br>2-8<br>3-15<br>4-33<br>5-32 | 1-8<br>2-10<br>3-22<br>4-25<br>5-25 | 1-2<br>2-5<br>3-12<br>4-35<br>5-36 |
| A sense of interest during group discussion | 1-8<br>2-12<br>3-25<br>4-25<br>5-20 | 1-2<br>2-5<br>3-18<br>4-30<br>5-35 | 1-7<br>2-12<br>3-20<br>4-28<br>5-23 | 1-1<br>2-4<br>3-15<br>4-33<br>5-37 |

**Table 2.** Continued

| Questionnaire item | United Kingdom | | Japan | |
|---|---|---|---|---|
| | CG (1-5 points/number of students) | EG (1-5 points/number of students) | CG (1-5 points/number of students) | EG (1-5 points/number of students) |
| The model facilitated a better understanding of the material | 1-12<br>2-14<br>3-20<br>4-22<br>5-22 | 1-3<br>2-4<br>3-15<br>4-28<br>5-40 | 1-9<br>2-11<br>3-23<br>4-24<br>5-23 | 1-2<br>2-3<br>3-14<br>4-32<br>5-38 |
| Willing participation in practical tasks during the session | 1-9<br>2-13<br>3-22<br>4-28<br>5-18 | 1-2<br>2-5<br>3-15<br>4-30<br>5-38 | 1-8<br>2-10<br>3-22<br>4-26<br>5-24 | 1-1<br>2-4<br>3-15<br>4-34<br>5-36 |
| Confidence when completing tasks independently | 1-11<br>2-12<br>3-25<br>4-22<br>5-20 | 1-3<br>2-6<br>3-18<br>4-28<br>5-35 | 1-9<br>2-12<br>3-24<br>4-25<br>5-20 | 1-2<br>2-4<br>3-16<br>4-32<br>5-36 |
| Active interaction with the lecturer during the explanation of new material | 1-10<br>2-12<br>3-22<br>4-28<br>5-18 | 1-2<br>2-5<br>3-15<br>4-32<br>5-36 | 1-8<br>2-11<br>3-22<br>4-27<br>5-22 | 1-1<br>2-3<br>3-14<br>4-33<br>5-37 |
| Application of acquired knowledge in group projects | 1-11<br>2-13<br>3-20<br>4-25<br>5-21 | 1-3<br>2-5<br>3-17<br>4-30<br>5-35 | 1-7<br>2-12<br>3-23<br>4-25<br>5-23 | 1-2<br>2-3<br>3-15<br>4-33<br>5-36 |
| Satisfaction with individual learning progress | 1-9<br>2-14<br>3-22<br>4-25<br>5-20 | 1-2<br>2-4<br>3-15<br>4-30<br>5-39 | 1-8<br>2-11<br>3-22<br>4-26<br>5-23 | 1-1<br>2-4<br>3-14<br>4-34<br>5-37 |

**Note:** each column indicates the number of students who selected a given score on the Likert scale from 1 to 5
**Source:** compiled by the authors based on the conducted pedagogical experiment

In both countries, the results of the pre-test survey were determined by the following factors: organisational, pedagogical and sociocultural ones that affected the initial level of students' learning activity. These were their different experiences of studying in previous educational institutions, various approaches to the organisation of their learning in different educational traditions, which affected their initial preparedness for independent preparation for classes, active participation in discussions with teachers and their colleagues and their interaction with the lecturer. The impact was also related to the peculiarities of the learning conditions, such as the degree of task structuredness, the attitude of participants to the responsibility for the individual result, and the experience and practice of preparing the theoretical material before class, which determines the level of understanding of the content and confidence in carrying out a learning activity.

The differences identified between the control and experimental groups at the initial stage of the pedagogical experiment can be explained by different academic motivation, the degree of development of the skills of active and practice-oriented learning, and the attitude of participants to collaborative forms of activities. A higher level of engagement was also explained by the openness to new forms of teaching activity, the prior experience of active and practice-oriented learning, and the presence of an internal readiness for activity-based learning and for the practical application of knowledge. A smaller level of student learning activity and engagement, as well as satisfaction with the process of learning, was explained by the cautious attitude of participants to the new forms of learning work, preference for reproductive forms of learning, and the need to allow time to get used to the new teaching conditions.

Thus, an analysis of the results of the pre-test (Table 2) revealed that the control and experimental groups were equivalent at the beginning of the pedagogical experiment. According to the Student t-test, no significant differences were obtained between the groups at the initial stage ($p > 0.05$), which means that they can be compared with each other in terms of the levels of engagement, interest, and level of motivation before the pedagogical experiment.

The participants in each country performed the same learning activities, such as watching videos, writing notes, taking online tests, analysing cases, writing essays, problem-solving in groups, giving a presentation, participating in a debate, and taking part in a simulation. While the control groups operated primarily on their own, with a resulting lack of information sharing, the experimental groups implemented the flipped classroom model centred around collaboration, decision-making, and peer

assistance. As a result, they were able to work more efficiently with the material and gain more understanding of the subject matter. Online educational resources (PlayPosit, n.d.; H5P, n.d.; Genially, n.d.; Socrative, n.d.; OneNote, n.d.) supported interactive and individual and team learning activities. These resources were used by the students in the control group for individual work, while the students in the experimental group used them to work in teams where they discussed the results and made joint decisions (Table 3).

**Table 3.** Completion of learning tasks by students in the United Kingdom and Japan (CG and EG)

| Country | Task type | Control group | Experimental group |
|---|---|---|---|
| United Kingdom | Tests (%) | 75/15/10 | 83/12/5 |
| | Short essays (%) | 70/20/10 | 80/15/5 |
| | Individual presentations (%) | 65/25/10 | 82/13/5 |
| | Collaborative case analysis (%) | 60/25/15 | 85/10/5 |
| | Group projects (%) | 58/28/14 | 80/15/5 |
| | Group discussions (%) | 55/30/15 | 88/10/2 |
| | Interactive video-based exercises (%) | 62/28/10 | 83/12/5 |
| Japan | Tests (%) | 72/18/10 | 87/10/3 |
| | Short essays (%) | 68/20/12 | 85/12/3 |
| | Individual presentations (%) | 63/25/12 | 82/13/5 |
| | Collaborative case analysis (%) | 60/28/12 | 88/10/2 |
| | Group projects (%) | 58/30/12 | 83/12/5 |
| | Group discussions (%) | 55/32/13 | 90/8/2 |
| | Interactive video-based exercises (%) | 60/30/10 | 85/10/5 |

**Note:** for each task, percentages of completion are indicated: fully/partially/not completed
**Source:** compiled by the authors based on the conducted pedagogical experiment

The control groups in both countries performed well in individual tasks (tests, short essays); however, the level of full completion of group tasks was lower (55-65%). The experimental groups achieved the best results in terms of collaborative tasks (83-90% full completion), indicating the effectiveness of the model of the flipped classroom and team learning. The best result in collaborative tasks (88-90% full completion) was shown by the Japanese students from the experimental group, due to working together in a group and active communication with the lecturer.

A strong correlation between the results of the post-test and performance on collaborative tasks ($r = 0.62$-$0.80$, $p < 0.05$) was established for both countries. The correlation on individual tasks was moderate ($r = 0.35$-$0.50$, $p < 0.05$). These results indicate that collaborative communication and the use of educational interactive resources increase academic performance, while cultural specificity affects the choice of learning model (Japanese students demonstrate better results when working in structured groups, while students from the United Kingdom, on the contrary, prefer independent work followed by collaborative discussions). Table 4 shows the results of the post-test conducted in the United Kingdom and Japan on the effectiveness of the students' performance on the tasks of the control and experimental groups after the pedagogical experiment.

**Table 4.** Post-test results of the students' educational achievements in the United Kingdom and Japan (CG and EG)

| Questionnaire item | United Kingdom | | Japan | |
|---|---|---|---|---|
| | CG (1-5 points/number of students) | EG (1-5 points/number of students) | CG (1-5 points/number of students) | EG (1-5 points/number of students) |
| Active preparation of material before the session | 1–4<br>2–8<br>3–18<br>4–30<br>5–30 | 1–3<br>2–7<br>3–15<br>4–32<br>5–33 | 1–3<br>2–7<br>3–20<br>4–28<br>5–32 | 1–1<br>2–4<br>3–10<br>4–35<br>5–40 |
| A sense of interest during group discussion | 1–5<br>2–10<br>3–20<br>4–25<br>5–30 | 1–2<br>2–6<br>3–17<br>4–30<br>5–35 | 1–4<br>2–8<br>3–18<br>4–28<br>5–32 | 1–1<br>2–3<br>3–12<br>4–33<br>5–41 |
| The model facilitated a better understanding of the material | 1–4<br>2–10<br>3–18<br>4–28<br>5–30 | 1–3<br>2–5<br>3–15<br>4–30<br>5–37 | 1–3<br>2–7<br>3–20<br>4–30<br>5–30 | 1–1<br>2–3<br>3–10<br>4–34<br>5–41 |

**Table 4.** Continued

| Questionnaire item | United Kingdom | | Japan | |
|---|---|---|---|---|
| | CG (1-5 points/number of students) | EG (1-5 points/number of students) | CG (1-5 points/number of students) | EG (1-5 points/number of students) |
| Willing participation in practical tasks during the session | 1–4<br>2–8<br>3–20<br>4–28<br>5–30 | 1–2<br>2–6<br>3–15<br>4–30<br>5–37 | 1–4<br>2–8<br>3–18<br>4–28<br>5–32 | 1–1<br>2–4<br>3–12<br>4–33<br>5–40 |
| Confidence when completing tasks independently | 1–5<br>2–10<br>3–18<br>4–27<br>5–30 | 1–3<br>2–6<br>3–17<br>4–28<br>5–36 | 1–3<br>2–8<br>3–20<br>4–28<br>5–32 | 1–1<br>2–3<br>3–10<br>4–34<br>5–41 |
| Active interaction with the lecturer during the explanation of new material | 1–4<br>2–8<br>3–20<br>4–28<br>5–30 | 1–2<br>2–6<br>3–15<br>4–30<br>5–37 | 1–4<br>2–7<br>3–18<br>4–30<br>5–31 | 1–1<br>2–3<br>3–12<br>4–33<br>5–40 |
| Application of acquired knowledge in group projects | 1–4<br>2–8<br>3–18<br>4–30<br>5–30 | 1–3<br>2–6<br>3–17<br>4–28<br>5–36 | 1–3<br>2–7<br>3–20<br>4–28<br>5–32 | 1–1<br>2–3<br>3–10<br>4–34<br>5–41 |
| Satisfaction with individual learning progress | 1–5<br>2–10<br>3–18<br>4–27<br>5–30 | 1–2<br>2–5<br>3–15<br>4–30<br>5–38 | 1–4<br>2–8<br>3–18<br>4–28<br>5–32 | 1–1<br>2–3<br>3–12<br>4–33<br>5–41 |

**Note:** each column indicates the number of students who selected a given score on the Likert scale from 1 to 5
**Source:** compiled by the author based on the conducted pedagogical experiment

Comparison of the results of the post-test indicated that the students in the experimental groups from both countries improved their learning motivation, learning involvement, and confidence in academic activity. With the exception of two items in the questionnaire, all other indicators show a preponderance of high scores. Thus, it can be noted that the proposed model of learning contributed to the most active students' participation in classroom activities, their ability to independently prepare for lessons and a conscious use of knowledge in their work in both individual and collaborative tasks.

An analysis of the results achieved by the students in the experimental groups revealed a difference in the characteristics of the students' learning activity depending on the cultural and national context. The results for the students in the United Kingdom's experimental group indicate that they have taken on more responsibility for their own learning, that their individual preparation was effective and that they actively took part in practical activities. However, Japanese students from the experimental group have a higher degree of interaction in groups, confidence in completing academic tasks and are more satisfied with the results of their own learning, which could be associated with cultural patterns of collective responsibility and cooperation.

A slight growth in average indicators was recorded for the post-test of control groups in both nations after the completion of the teaching period, but the level of development of the studied features remained lower than in the experimental groups. This fact testifies to the lack of potential of traditional forms of teaching to cause high activity in learning and to form independence in students.

The statistical analysis of the post-test results (Table 4) showed a positive dynamic within groups. In particular, in the control groups, statistically significant differences compared with the pretest were recorded for most indicators ($p < 0.05$). At the same time, intergroup analysis revealed a statistically significant advantage of the experimental groups over the control groups in terms of independent preparation, participation in group tasks and the application of knowledge in practice ($p < 0.01$), confirming the effectiveness of the implemented pedagogical model.

**Impact of the pedagogical experiment on the motivation and academic achievement of students**

To assess the level of academic motivation of students in both countries, the AMS was applied. The level of academic motivation was established on the basis of the teacher's information about the performance of learning tasks, the quality of participation of students in discussions and practical exercises, the quality of implementation of joint work, as well as the pre-test and post-test results. This allowed assessment of the level of intrinsic and extrinsic motivation and the level of amotivation of the students. Table 5 shows the average values (M) for control and experimental groups in the United Kingdom and Japan in the subscales of AMS. The measurement unit is a rating in the range from 1 to 5 (1 is the lowest rating, 5

is the highest rating). The subscales of the AMS make it possible to assess various aspects of the academic motivation of students. Intrinsic subscales (Knowledge, Accomplishment, Stimulation) demonstrate the level of intrinsic, spontaneous interest of students in the learning process. Extrinsic subscales (External regulation, Introjection, Identification) assess the extent to which students are motivated by extrinsic influences. The amotivation subscale indicates a lack of motivation. Thus, the data presented in the table reflect the dynamics of changes in student motivation before and after the implementation of the flipped classroom model and allow for a comparison of the effectiveness of traditional and innovative approaches to the learning process in both countries.

**Table 5.** Academic motivation (AMS) of students in the United Kingdom and Japan: Comparison of CG and EG

| Subscale | Control group Pre-test M (mean value) | Control group Post-test M (mean value) | Experimental group Pre-test M (mean value) | Experimental group Post-test M (mean value) |
|---|---|---|---|---|
| **United Kingdom** | | | | |
| Intrinsic motivation – knowledge | 3.50 | 4.05 | 3.85 | 4.70 |
| Intrinsic motivation – accomplishment | 3.48 | 4.00 | 3.80 | 4.68 |
| Intrinsic motivation – stimulation | 3.45 | 4.02 | 3.78 | 4.65 |
| Extrinsic motivation – external regulation | 3.40 | 3.95 | 3.75 | 4.60 |
| Extrinsic motivation – introjected regulation | 3.42 | 4.00 | 3.77 | 4.63 |
| Extrinsic motivation – identified regulation | 3.47 | 4.03 | 3.82 | 4.70 |
| Amotivation | 2.10 | 1.85 | 2.05 | 1.50 |
| **Japan** | | | | |
| Intrinsic motivation – knowledge | 3.55 | 4.10 | 3.90 | 4.80 |
| Intrinsic motivation – accomplishment | 3.50 | 4.05 | 3.85 | 4.75 |
| Intrinsic motivation – stimulation | 3.48 | 4.07 | 3.83 | 4.72 |
| Extrinsic motivation – external regulation | 3.42 | 4.00 | 3.78 | 4.65 |
| Extrinsic motivation – introjected regulation | 3.45 | 4.05 | 3.80 | 4.70 |
| Extrinsic motivation – identified regulation | 3.50 | 4.08 | 3.85 | 4.78 |
| Amotivation | 2.08 | 1.80 | 2.00 | 1.45 |

**Source:** compiled by the author based on the Academic Motivation Scale (n.d.)

The results of the AMS demonstrated a positive change in the motivational structure of students in all groups, but more noticeably in the experimental groups in both countries. In the United Kingdom and Japan, the control groups showed an increase in intrinsic motivation and a decrease in amotivation. This means that students' interest in the learning process and their learning activity increased; however, their motivation level was lower than that of the experimental groups. Such a situation is due to the traditional character of the organisation of the educational process in the study of foreign countries and the limited opportunities for students to work together, as they mostly had to perform tasks individually. The results of the research conducted in experimental groups in both countries showed an increase in intrinsic motivation and a decrease in amotivation, which indicates the high activity of the learning process of the students. In the United Kingdom, the increase in motivation was mainly driven by students' independent work with educational materials and exercises, while the Japanese learners' motivation was additionally promoted by the execution of tasks together as a team and communication with the lecturer, which promoted teamwork, the ability to critically analyse information, and self-organisation.

The Japanese students in the experimental group had higher scores across all of the AMS subscales than all other groups, which can be explained by learning traditions and the way students work as part of a group. The results for the control groups showed an increase in student motivation, although they did not reach the level of motivation shown by the experimental groups, and there were no significant changes in the subscales. Consequently, the flipped classroom approach resulted in an increase in student intrinsic and extrinsic motivation and a decrease in amotivation, leading to increased learning activity, self-organisation and improved academic effectiveness. The results for the experimental group were higher than the results for the control group, which shows that the organisation of tasks and interactions between students contribute to increased student motivation. Mean scores for both groups are shown in Table 6.

**Table 6.** Mean academic performance scores of students in the United Kingdom: CG and EG

| Group | United Kingdom | | Japan | |
|---|---|---|---|---|
| | Pre-test M | Post-test M | Pre-test M | Post-test M |
| Control group | 3.45 | 4.05 | 3.50 | 4.10 |
| Experimental group | 4.03 | 4.76 | 4.10 | 4.85 |

**Source:** compiled by the author based on the t-Student's test

The analysis of mean scores for both groups showed an increase in students' learning outcomes, with the control group increasing from 3.45 to 4.05, which showed a moderate increase in student understanding and engagement with the material and learning activities. The experimental group increased from 4.03 to 4.76, which showed the high effectiveness of the flipped classroom model and independent work, which led to greater understanding of the material, engagement with learning activities and motivation. The overall mean values show the highest level of understanding and engagement in the experimental group and thus demonstrate the effectiveness of the experiment.

In the case of Japanese students in the experimental group, the students had the highest mean value of all the groups, increasing from 4.10 to 4.85, which shows the high effectiveness of collaborative work, active interaction with the lecturer and task execution as part of a team. The Japanese control group also showed a positive trend (from 3.50 to 4.10), although without the effect of team-based interaction. Japanese students in the experimental group achieved the highest mean score in all task components compared with the United Kingdom students, which suggests a greater influence of culture and learning organisation for Japanese students on the effectiveness of the flipped classroom model. The mean academic performance scores (Table 6) revealed a statistically significant intergroup difference; according to the t-test, students of the experimental group obtained higher scores than the students of the control group ($t = 3.75\text{-}5.22$; $p < 0.01$). This is associated with an increase in intrinsic and extrinsic motivation, a reduction in amotivation, and more successful completion of practical tasks and case study work. In Japanese students, the statistically significant difference between the groups turned out to be higher than in British students. It proves the positive effect of a well-organised, group-oriented organisation of the learning process.

The implementation of a flipped classroom method contributed to the growth of students' academic achievement and motivation through the activation of independent preparation in various topics, interactive discussion of topics, completion of practical tasks, and discussion at meetings. Another key factor in increasing effectiveness is the implementation of interactive online resources. For example, PlayPosit helped develop interactive videos with questions integrated into them, so students could assess the effectiveness of their knowledge by receiving immediate feedback during video viewing. H5P helped create interactive tasks and presentations that contributed to higher active participation of students and the visualisation of study materials. Genially was used to develop interactive presentations and posters that promote creative thinking and discussion of ideas in the context of a group. Socrative provided the opportunity to conduct an online test/survey in real time, thus providing students with an assessment tool to adjust learning activities in response to the results. OneNote helped to structure the notes, create summaries of the lectures, organise the exchange of material collaboratively, thus supporting students in the organisation of group work and encouraging communication and exchange of experiences. Due to these integrated interactive resources, students could learn theoretical knowledge while implementing it right away through a wide variety of independent and group tasks. Interactive elements, adaptive tests, and the organisation of group work led to the involvement of students in the learning process, as well as the activation of their independent work, awareness of their responsibility for the outcome. This, in turn, resulted in better achievement in the experimental groups and higher motivation (intrinsic).

The Japanese experimental group that worked jointly, focusing on group interaction and joint decision-making, showed higher results than the control group that worked individually in the United Kingdom. Japanese students achieved better results in all subscales of the Academic Motivation Scale (n.d.) and the mean score in learning tasks, because interactive teamwork led to an increase in both intrinsic and extrinsic motivation, reduced amotivation, and made the process of learning knowledge more effective. The results showed that British students achieved the best results because of the high degree of autonomy in the process of independent work in the learning process, and Japanese students managed to achieve improvement due to the implementation of collective responsibility and organised guidance by the lecturer, as well as step-by-step control of the study progress. These variations were linked to the specific priorities, approaches to teaching, and levels of digital readiness of the universities in each country.

**Student learning scenarios based on the flipped classroom model**

On the basis of the research conducted, as well as the test results and data obtained, several models of students' study processes were distinguished. In the first case, students had access to individual, interactive learning resources, such as PlayPosit, H5P, Genially, Socrative and OneNote, which they used to study the required materials before the lesson. By watching videos, carrying out self-check activities, analysing case studies and making notes, students familiarised themselves with the basics of the topic and discussed these issues in group sessions. This led to more effective teamwork and made it easier to discuss difficult issues. According to this case study, students in the United Kingdom reported the following mean values: intrinsic motivation to learn $M = 4.68$; extrinsic motivation to learn $M = 4.70$; and amotivation decreased to 1.52. Students in Japan reported the following figures on similar activities, taking into account national characteristics of collaborative learning and interaction with the teacher, and the mean values were intrinsic motivation to learn $M = 4.75$, extrinsic motivation $M = 4.72$, and amotivation decreased to 1.48. In reality, the teacher set up tasks for the students in advance, providing access to online platforms several days before the lesson, and checking whether the students had fulfilled these requirements by means of interactive testing systems. Students prepared in advance were more active in classes,

asked questions to clarify and discussed the practical use of the knowledge.

The second case involved students performing group work, in which they analysed practical problems, worked on assignments, designed a simulation of a learning situation, made joint decisions, distributed roles and produced joint presentations or reflective essays. This type of activity contributed to an increase in both types of motivation. The results of the study showed that among students in the United Kingdom, intrinsic motivation for achievement increased from M = 3.80 (pretest) to M = 4.68, introjected regulation of extrinsic motivation increased from M = 3.77 to M = 4.63, and amotivation decreased from M = 2.05 to M = 1.50. Among Japanese students, structured collaborative work and active interaction with the lecturer increased intrinsic motivation from M = 4.00 to M = 4.68 and introjected regulation of extrinsic motivation from M = 3.90 to M = 4.72, with the amotivation falling from M = 1.95 to M = 1.45. The task was to discuss the results within each group and present the conclusions in writing. For group analysis, students used OneNote (n.d.) or Genially (n.d.). The activity of the teacher was to moderate the discussion on the problem posed, guide the work of the group, and provide feedback to students. This allowed students to interact successfully, develop their ability to communicate and put theory into practice, as well as boost their motivation and results.

The third option, discussing test results from an online test together, as well as reflective essays and practical work, enabled the students to identify their own mistakes, compare their results with the rest of the group and refine their approach to the material. This led to an increase in British students' intrinsic motivation for achievement (M = 4.70) and intrinsic motivation for stimulation (M = 4.65) and a decrease in their amotivation (1.50). Among Japanese students, these indicators were even higher: intrinsic motivation for achievement reached M = 4.80, intrinsic motivation for stimulation reached M = 4.75, and amotivation decreased to M = 1.45. In practice, this scenario was conducted using in-person or online discussion and the Socrative system for quickly getting the results of a test, followed by the moderator's work and a brief group reflection (students exchanged experiences, discussed common mistakes, and jointly worked out a plan). This facilitated greater student engagement and active thinking and improved their ability to absorb information, as well as improved their ability to self-regulate and to work in groups.

Taking into account the different cultural features of students in various countries, the learning scenarios constructed based on the flipped classroom are adaptable to the various needs of diverse learning groups. They included a combination of independent preparation with interactive online resources, collaborative completion of practical tasks and case studies, discussion of results and work on reflections. This approach allowed for sufficiently taking into account the differences in learning and communication patterns, the sociocultural requirements of different countries and the traditions of interaction between students, which is essential when organising learning in a flipped classroom within the framework of an international education environment.

Students from an individualistic culture (United Kingdom) showed a high level of initiative and responsibility for their own learning. They planned their own learning time, worked through educational materials systematically and controlled their own progress. For these students, the first approach – which involved self-directed study using interactive online platforms – proved to be the most effective. The use of interactive online resources such as PlayPosit, H5P, Genially, Socrative, and OneNote allowed students to view learning videos on their own, do self-assessment tasks, analyse case studies and work out their own notes, which allowed them to obtain the necessary base knowledge before the group discussion. Such learning design contributed to self-regulation of their learning and tracking their own progress and development of intrinsic motivation for achievement, as learners could control the speed of acquiring the material based on their individual needs and interests.

In comparison, in countries with a collectivist culture, such as Japan, students were more used to working in groups, jointly making decisions and coordinating action in the learning process. For students from collectivist cultures, group support and responsibility and orientation toward a group result were of particular importance, which is why the second scenario with a group practical work with case studies, projects, and modelling of learning situations was more useful for them in practice. In this situation, students participated jointly in decision-making, division of roles and work, discussion of options for task completion, and group presentation of results or writing reflective essays. This kind of learning arrangement contributed to the development of intrinsic achievement motivation (by feeling their contribution to the general result) and contributed to extrinsic achievement motivation by introjected regulation (to meet the expectations of the group) and identified regulation (to communicate). The joint completion of the work allowed students to understand the learning content more fully, discuss difficult points in detail, develop communication skills and skills to coordinate activities in teamwork.

In the third scenario, when the test results, reflective essays, and practical assignments were collectively discussed, students were able to discuss and compare their own results with the results of their classmates, identify the most successful approaches to learning, and adjust their own learning accordingly. This learning arrangement could be successful in countries where the tradition is an active discussion, exchange of experience with the group, and the presence of active group interaction in the whole educational process. Students were able to observe how their classmates solve problems and adjust their own work process in real time, to identify the most successful strategies and approaches to the material, and to learn from the experience of other people. This approach allowed them to

improve not only academic results, but also to develop critical thinking, self-monitoring, reflection and skills to interact effectively with each other.

All three scenarios have shown that this organisation of learning positively affects students' motivation and academic achievement as well. It was adapted to the characteristics of the national educational context, considering the individual and cultural requirements and expectations of students regarding the organisation of the educational process, the possibility of a balance between the individual and group work organisation, and the integration of all the required elements for the successful development of both academic and interpersonal competencies. Through this approach, students were able not only to master the learning material but also to interact actively with peers, evaluate their own actions, develop teamwork skills, and refine their learning strategies, which corresponded to the demands of contemporary educational practice in the context of globalisation and cultural diversity.

## DISCUSSION

The case of integrating flipped learning in higher education in the United Kingdom and Japan showed certain differences in practice, depending on national priorities, pedagogical traditions, and digital maturity levels of universities. British universities are characterised by more autonomy for students in the preparation for the class, while Japanese universities are characterised by the emphasis on responsibility and support from the lecturer. These results correspond with the claim of T. Alqahtani *et al.* (2023) who reported that flipped learning is effective if it is based on the principles of constructivist design and the learning content is properly verified. At British universities, the flipped classroom was based on the principles of constructivism, where students get involved in the learning material before the lesson while studying independently, and at Japanese institutions, flipped classrooms were institutionalised, which implied clearly defined steps of learning and control of progress. This also corresponds to the findings of R. Al-Maroof & M. Al-Emran (2021), who stated that culture plays a role in the development of flipped classrooms and communication with teachers and students. In both countries, the use of the flipped classroom was associated with critical thinking, self-study and self-management skills, but to a greater degree, at universities in the United Kingdom, due to the popularity of project-oriented work and individualised learning approach. According to M. Cevikbas & G. Kaiser (2022), similar results have been observed: with an individual approach in a flipped classroom, students learn content and have higher motivation. The main role in Japanese universities is played by the integration of Information and Communication Technologies (ICT) to support collaborative learning, which is in line with the conclusions of A. Cueva & E. Inga (2022) who demonstrate the importance of digital tools in fostering communicative interaction and developing students' digital competence. The obtained data also confirm the trend described by I. Chou (2020), who ascertained that the application of the flipped model of English-language teacher education courses improves learning outcomes and student perceptions. In both countries, students reported an increase in satisfaction with the educational process. In Japanese universities, students emphasised the need for clearer instructions and more learning resources, whereas at British universities, they pointed to a flexible and individualised approach to preparing for classes. These results correspond to the findings of A. Arslan (2020), who reported the results of applying flipped learning to language education: for successful implementation of the model, students' digital skills should be developed, and appropriate interactive materials should be created. In the United Kingdom, this element is well supported with the use of an open online platform, whereas in Japan, the key point is the adaptation of learning materials to national standards.

Academic success is not the sole beneficiary of the flipped classroom approach: this educational model also promotes the acquisition of social and communicative competencies. This aligns with the conclusions reached by J. Elkhalladi & A. Sefrioui (2024), who showed that the flipped format has a beneficial effect on students' communicative skills as well as their sense of duty and sense of professional ethics among different specialities. For example, at British universities, these skills were acquired by means of group discussion and presentation, while in Japanese ones, collaborative work on the creation of learning resources and participation in synchronous online meetings were used for these purposes. Another advantage of the model was the development of students' critical thinking. This also corresponds to the study findings by P. Etemadfar *et al.* (2020), who claimed that students in a flipped classroom environment had improved analytical thinking abilities, and their level of understanding increased in the process of language acquisition. The students also experienced higher motivation to self-study and were more likely to actively take part in the discussion in class. Similar findings by L. Hao *et al.* (2024) confirmed the positive effect of project-based flipped learning on the critical thinking and creativity of students in economics-related disciplines. The study also indicated an improved ability among students to work in teams and to solve complex tasks effectively. At the same time, the results revealed some discrepancies with the conclusions of T. Bhuttah *et al.* (2024), who argued that the effectiveness of innovative pedagogical approaches increases only in the presence of inclusive leadership and a supportive learning environment. Nevertheless, at British universities, in spite of a high technological preparedness, there were problems in ensuring students' active social involvement in group tasks. In Japanese universities, there is a stable balance between structural rigidity and the degree of freedom. This is also confirmed by the results of Z. Moula's (2021) crosscultural study on barriers and enablers for creativity in higher education pedagogy at universities in the United Kingdom and China. She claims that the intense use of technological tools helps to stimulate students'

creative thinking and increase their level of engagement, with the students actively participating in synchronous and asynchronous learning activities. It also supports the findings of P. Pimdee *et al.* (2024), who demonstrated that blended problem-based learning within the flipped classroom format, used in online classes, resulted in better educational outcomes and helped develop students' skills of problem-solving. In the case of the United Kingdom, combining asynchronous work on lectures with synchronous discussion of problem-based learning tasks helps to better engage students in the learning process. A greater focus on structured knowledge acquisition and strict adherence to the curriculum was observed, which is consistent with the study by T. Kameda *et al.* (2022) on the implementation of ultrasonic education in universities. As they claim, a staged implementation of new teaching tools and technologies, such as flipped classrooms, requires a systematic design and integration of new activities into courses to proceed effectively. For Japanese students, the process of mastering the material was more successful through asynchronous structured work and its practical implementation with a tutor's support. This confirms the recommendations from T. Kameda *et al.* about the implementation stages and sequential learning of complex skills and abilities in practical education. Comparing it with the results from B. Ünal *et al.* (2024) indicates that motivation, learning strategies and cognitive load all contribute to student views on the flipped classroom model. Students in both countries showed variations in approaches to independent learning, with the British students showing greater readiness to explore and discuss the material to be learned on their own, while the Japanese students preferred clear guidelines and required a lot of directed learning tasks. In this study, the cultural differences influence students' attitudes towards using new learning technologies, in line with A. Persson *et al.* (2021). It was observed that students from different cultural backgrounds perceived independent learning and interactive elements of a flipped classroom differently, but both groups experienced an improvement in learning performance and motivation. In the control group, the mean score increased from 3.45 to 4.05, but in the experimental group, it increased more significantly, from 4.03 to 4.76, indicating a greater improvement in the experimental group.

A comparison with other blended learning models in implementing the flipped classroom corroborates the results of the study by F. Khodabandeh & M. Tharirian (2020), who concluded that combining traditional methods and flipped techniques for grammar teaching improves the academic achievement of the students. The students involved in flipped classroom activities had a more active use of knowledge in practical tasks compared to students who studied only in the traditional way. The research by E. Rojas *et al.* (2023) on implementing metaverse technologies in higher education revealed the benefits of introducing advanced technologies into the flipped classroom for improving student motivation and creating opportunities to practically apply knowledge. C. Lo & K. Hew (2023) also highlighted opportunities and challenges of the use of digital technologies in implementing the flipped classroom. The use of chatbots and technologies of PlayPosit, H5P, Genially, Socrative and OneNote in the experimental group proved to give immediate feedback and to develop students' independent learning strategies. Innovative technologies in the flipped classroom help in increasing student motivation, developing independent learning strategies and improving the active use of knowledge in practice. At the same time, cultural and educational differences influence different levels of readiness of students to use digital tools and engage in independent study.

## CONCLUSIONS

The study looked at different models of the flipped classroom, including The Traditional Flipped Classroom, The Flipped Mastery Model, The Collaborative Flipped Model, The Flipped Interactive Model and the Flipped MOOC model. All these models combine independent online learning with various types of activities in the classroom. Special attention was paid to the use of such digital resources as PlayPosit and H5P for interactive exercises and videos, Genially for creating presentations and learning simulations, Socrative for online tests and surveys, and OneNote for collaborative work and the organisation of learning materials. The identification of cultural and pedagogical specifics of universities, including the University of Tokyo and the University of Bedfordshire, and the differences between the organisation of collaborative and individual learning made it possible to select an approach to improving student motivation and learning activity using a mix of digital technologies, differentiated tasks, and organised monitoring of knowledge acquisition in stages.

After introducing the flipped classroom model, there was growth in student motivation and in learning results. The experimental group in Japan was characterised by working with students in collaboration, group discussions, and joint decision-making, using interactive digital resources (PlayPosit, H5P, Genially, Socrative, OneNote). 35-40 students rated all items of the post-test from 4-5. The growth of mean scores for the experimental group ($M = 4.03$ to $M = 4.76$), the growth of intrinsic achievement motivation (from 3.80 to 4.68), and the decrease in amotivation (from 2.05 to 1.50). The differences in the experimental group were more evident than in the control group ($M = 3.45$ to 4.05), which suggests the effectiveness of the proposed model in stimulating activity and motivation. The greatest percentage of fully completed tasks was found in the experimental group (88%) for group discussions, while the lowest rate of task completion was found in the control group for individual presentations (65%). Collaborative case-solving and solving an interactive video-based test were completed 85% and 83% in the experimental group, respectively, by comparison with the control group (short essays and tests at 70-75% completion). These data suggest the effectiveness of the collaborative tasks in ensuring

greater results in learning and application of knowledge, with individual tasks demonstrating a moderate level of knowledge acquisition.

Three student learning scenarios based on the flipped classroom model were developed: digital resources for independent study, group work to tackle practical cases, and discussions on test results and assignments. These scenarios fostered intrinsic and extrinsic motivation, stimulated active agency in the learning process, and fostered communicative and reasoning skills. A limitation of the study is that it was conducted only among students of selected universities in the United Kingdom and Japan, and this may limit generalisability to other education contexts and student populations. Therefore, more research should be done to study the effect of a flipped classroom model on the development of students' intercultural and digital competencies from other countries.

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## CONFLICT OF INTEREST

None.

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